

# Service Area Plan

## Department of Mines, Minerals and Energy

### Geologic and Mineral Resource Investigations, Mapping, and Utilization (50601)

## Service Area Background Information

### Service Area Description

This service area provides information on Virginia's geology and mineral resources. Geologic maps, reports, commodity information, and consultations are used by mineral producers, local, state, and federal agencies, developers, consultants, and other. They use this information for land use planning, environmental assessments, identification of mineral deposits needed for manufacturing, highway, and infrastructure construction, locating producible groundwater resources, and other uses. The Director of DMME's geologic service area is designated as the State Geologist. Many activities in this service area are coordinated with the United States Geological Survey (USGS). Products and services include:

- Customer assistance, such as examination of the state's geology, geologic and topographic mapping, geologic reports, technical assistance, information on mineral and energy reserves, identification of natural hazards, assistance with mine and public safety concerns, mineral industry statistics, and information on geology and mineral resources on state-owned lands.
- Assistance with regulatory development through providing geologic information about mining areas.
- Identification, investigation, and cataloging of abandoned/orphaned mine lands.
- Providing information in support of economic development, such as site geology, mineral availability, and on-site sources of groundwater.

### Service Area Alignment to Mission

This service area directly aligns with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner to support a more productive economy.

### Service Area Statutory Authority

Chapter 25 of Title 45.1 of the Code of Virginia establishes the geologic and mineral resource investigation and information responsibilities of the geologic and mineral resource investigation, mapping, and utilization service area.

### Service Area Customer Base

Customer(s)	Served	Potential
Affiliated mineral extraction business interests	139	3,000
General public and businesses	495,000	7,500,000
Mineral Extraction Operators	77	300
Other governmental agencies	202	300

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#### **Anticipated Changes In Service Area Customer Base**

##### General public and businesses

- DMME provides information on the state's mineral resources and geology to the general public, industry, educational customers (teachers, faculty, and students), economic development officials, real estate developers, and other similar customers.

- DMME expects the general public and business customer base to increase over the next few years. As development moves into new areas, there is increasing need for geologic and mineral resource information to properly plan for and support new development. DMME also is expanding the information available across the Internet. As information is more readily available in electronic form, additional customers will become aware of its availability, thereby increasing DMME's customer base.

##### Other governmental agencies

- DMME provides geologic and mineral resource information to a wide variety of governmental agencies.
  - Economic development entities use mineral resource information in their business development activities. Other government agencies use geologic information to plan their projects. For example, this information is critical to proper planning of transportation projects and for completion of environmental impact assessments. Local governments use geologic information as an input to local land use planning processes. Local and state agencies use geologic information when addressing groundwater issues. They also use geologic information for disaster mitigation planning and request assistance in response to natural disasters. Agencies are increasingly assessing mineral resource information when evaluating land for conservation easements.
  - DMME provides information on the mineral extraction industry to other state and local agencies that have business relationships with the mineral extraction industry. These agencies look to DMME for guidance on how the extraction industry operates.

- DMME expects the number of governmental agency customers to grow in the next few years. Economic development organizations and localities will increasingly need information from DMME as the Coalfield Expressway is developed across Southwest Virginia. VDOT and other agencies need geologic information and information on sources of aggregate for planning the I-81 expansion. Local governments will increasingly need mineral resource information to assess how geologic conditions affect land development plans.

##### Mineral extraction operators

- Increases in energy and mineral commodity prices increase interest in companies looking to locate new mineral extraction operations in Virginia. Recently there has been a sharp increase in energy costs, with benchmark grades of oil selling for over \$50/barrel in March and April 2005. Spot Appalachian natural gas prices have ranged near \$6-7/thousand cubic feet through 2004 and 2005. The price of coal has increased from around \$20/ton to over \$50/ton for steam grade coal and over \$100/ton for metallurgic coal in mid-2005. This has increased the number of customers seeking natural gas, coal, and mineral information needed to facilitate exploration and development of these resources.

- Significant volumes of minerals are exported from Virginia. The volume of these exports may increase as Asian markets demand more mineral and energy commodities to meet their economic growth. Additionally, DMME has seen an increase in the number of domestic mining companies contacting the Division of Mineral Resources for information on deposits of industrial minerals. These factors are expected to continue and will increase the number of companies exploring for mineral deposits in Virginia.

##### Affiliated mineral extraction business interests

- Numerous businesses support mineral extraction operations such as consulting firms that assist with permit

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preparation and facility design.

- DMME expects to see an increase in the number of mineral industry consulting customers. Mining companies must find and permit new greenfield mine locations. These consulting firms have increasingly come to DMME for mineral resource and geologic information to assist in these efforts.

#### **Service Area Products and Services**

- Customer assistance
  - Hazard identification, technical assistance, education, and cooperative projects in such areas as environmental protection and land reclamation, geologic investigation and mapping, and economic mineral resource assessment.
  - Customer assistance services help customers maintain safe and environmentally protective mineral resource extraction sites, use geologic and mineral resource information to manage development and natural resources, and incorporate geologic information in land use planning.
- Regulatory development
  - Provide geologic information needed to establish minimum operational and reclamation requirements consistent with governing laws for mineral extraction operations.
  - These services ensure the legal standards governing mineral extraction operations are based on a clear understanding of how regulated operations must account for the underlying geologic conditions.
- Land reclamation
  - Identification and investigation of abandoned/orphaned mine lands to allow prioritization and design of needed reclamation.
  - Land reclamation services correct damage and mitigate risks of future damage from unreclaimed or improperly reclaimed mineral extraction lands.
- Economic development
  - Provide information in support of economic development (site geology, mineral availability, natural hazards, sources of water, and similar information).
  - Economic development services support efforts to increase jobs and economic activity in Virginia.

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#### **Factors Impacting Service Area Products and Services**

- Customer assistance requests are expected to increase as energy costs remain high. Coal mining and gas and oil companies will request more assistance to locate available resources for new operations
- Expansion of web-based electronic government capability will increase the sales potential of geologic information and maps.
- High oil and natural gas prices have caused an increase in national interest in development of offshore hydrocarbon resources. Virginia's offshore waters may contain such deposits. Assessment of these potential resources and the risk from developing and producing these resources will increase demands for DMME's customer assistance in areas of geology and gas and oil operations.
- The U.S. Minerals Management Service (MMS) has increased its interest in offshore sand and mineral resources. The MMS is requesting DMME undertake new geologic investigation activities to locate potential usable offshore deposits. Locating new offshore sand deposits will help provide cost-effective sources of sand for beach replenishment and for industrial mineral production. This will enhance economic development in coastal Virginia communities.
- Increased availability of digitized underground mine maps will allow mine permits and plans to account for the presence of the old mine works and result in a safer mining environment. DMME has thousands of digital underground coal mine maps that must be georeferenced in geographic information systems to accurately show their relationship with planned mines and other land uses. This is critical to ensure that new mines can be safely operated in the vicinity of the old workings. Accurate underground mine mapping is also critical to the design of the Coalfields Expressway and other economic development or infrastructure projects.
- Permitting of new mineral extraction sites will become more difficult as surface coal sites move closer to built-up areas (due to the limited areas of remaining coal reserves) and sprawl reaches areas where mineral mines are located. Companies will need additional geologic information to properly permit sites in areas with increasing land use conflicts and in new, more remote areas.
- DMME will need to replace a significant proportion of its workforce in the near future. This will eliminate a significant amount of the institutional knowledge that helps DMME understand and face the challenges of providing high quality customer service. DMME will be faced with increasing difficulty in finding these high quality workers at state salary rates as mining and other energy industries increase the amount they pay employees to combat their labor shortages.

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#### **Anticipated Changes To Service Area Products and Services**

- The demand for DMME's customer services are anticipated to increase as the mineral extraction industry faces continuing business challenges and as energy costs remain high.
- DMME has the potential to increase sales of geologic maps and information across the Internet as electronic government is more widely implemented.
- Interest in offshore sand, mineral, and natural gas deposits will increase the need for geologic investigations in offshore waters.
- Geologic support to digitize underground mine maps will increase as DMME is faced with georeferencing its backlog of scanned underground mine maps.
- DMME anticipates losing more employees to mine operators as these companies increase their salaries to respond to labor shortages. We will also be faced with increasing difficulty attracting the same level of experienced employees at current state salaries.

#### **Service Area Financial Summary**

The Geologic and Mineral Resource Investigations, Mapping, and Utilization service area funding comes from general funds (80%), federal funds (16%), and special funds generated from the sales office (4%).

	<b><u>Fiscal Year 2007</u></b>		<b><u>Fiscal Year 2008</u></b>	
	<b>General Fund</b>	<b>Nongeneral Fund</b>	<b>General Fund</b>	<b>Nongeneral Fund</b>
<b>Base Budget</b>	\$1,504,020	\$367,000	\$1,504,020	\$367,000
<b>Changes To Base</b>	\$149,232	\$30,000	\$149,232	\$30,000
<b>SERVICE AREA TOTAL</b>	<b>\$1,653,252</b>	<b>\$397,000</b>	<b>\$1,653,252</b>	<b>\$397,000</b>

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## Service Area Objectives, Measures, and Strategies

### Objective 50601.01

***To enhance worker safety at mineral and fossil fuel extraction sites and public safety affected by geologic conditions.***

DMME's divisions use geologic information to enhance their safety services. They need information about geologic conditions that could affect worker or public safety, and accurate digital maps showing abandoned mine workings and locations of geologic and mineral resources and abandoned surface mines.

#### This Objective Supports the Following Agency Goals:

- Provide for safe and environmentally sound mineral and fossil fuel extraction.  
( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 1, "Provide for safe and environmentally sound mineral and fossil fuel extraction" and with the long-term objectives to protect the public safety and to protect, conserve and wisely develop our natural resources.)

#### This Objective Has The Following Measure(s):

- **Measure 50601.01.01**

***Mine accidents where geologic factors contributed to cause.***

**Measure Type:** Outcome

**Measure Frequency:** Annually

**Measure Baseline:** Data being gathered.

**Measure Target:** Data being gathered.

**Measure Source and Calculation:**

Data is collected from reports of serious personal injuries and fatalities submitted by permitted mine operators throughout the year and the reports of employee work hours reported by permitted mine operators on their annual tonnage reports submitted to DMME. Accident causes are reviewed to determine whether geologic factors contributed to the accident. The rate where geologic factors contributed to the accident is calculated as the number of accidents with contributing geologic factors per 200,000 work hours. DMME evaluates the five-year rolling average of this rate to determine the trend.

#### Objective 50601.01 Has the Following Strategies:

- The DMME Division of Mineral Resources will address unsafe conditions through:
  - Assessing the potential impact of geologic factors on worker safety and public health at mineral extraction sites.
  - Roof-fall identification and analysis.
  - Locating and mitigating hazards around active and abandoned resource extraction sites.
  - Geologic investigations.
  - Participating, as requested, with other DMME divisions and state and local agencies in accident investigations.

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- The DMME Division of Mineral Resources, in collaboration with other DMME divisions, will contribute to the automated mapping program by:
  - Inventorying and cataloging mine maps, borehole data, and other mine-related information.
  - Analyzing subsurface conditions of the Southwestern Virginia coalfields using three-dimensional modeling methods.
  - Implementing data delivery methods via the DMME Intranet site.
- The DMME Division of Mineral Resources will work with other DMME divisions, customers, and stakeholders to proactively seek joint resolution on significant and emerging issues such as emergency preparedness and response capabilities.
- The DMME Division of Mineral Resources will assist the DMME Division of Mineral Mining to enhance inventory lists of abandoned, orphaned, and forfeited mineral mine sites.
- The DMME Division of Mineral Resources will pursue methods, such as external funding, partnerships, leveraging, and cooperating with other state and federal projects, to advance the elimination of adverse safety and health conditions.
- The DMME Division of Mineral Resources will assist providers of safety training programs and services and will participate in training with other entities as requested.

#### **Objective 50601.02**

##### ***To reduce adverse environmental conditions at mineral and fossil fuel extraction sites.***

DMME's divisions use geologic information to enhance their environmental protection services. They need information about geologic conditions that could affect worker or public safety, and accurate digital maps showing abandoned mine workings and locations of geologic and mineral resources and abandoned surface mines.

##### **This Objective Supports the Following Agency Goals:**

- Provide for safe and environmentally sound mineral and fossil fuel extraction.  
( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 1, "Provide for safe and environmentally sound mineral and fossil fuel extraction" and with the long-term objectives to protect the public safety and to protect, conserve, and wisely develop our natural resources.)

##### **This Objective Has The Following Measure(s):**

- **Measure 50601.02.01**

##### ***Geologically influenced hazards eliminated at mineral and fossil fuel extraction sites.***

**Measure Type:** Outcome      **Measure Frequency:** Annually

**Measure Baseline:** Data being gathered.

**Measure Target:** Data being gathered.

**Measure Source and Calculation:**

Data is collected from reports of abandoned and bond forfeiture reclamation completed by the DMME Divisions of Mined Land Reclamation and Mineral Mining. The divisions report the total number of hazards, such as miles of highwall, abandoned mine openings, and acres of land reclaimed. The annual total will be used for this measure.

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#### **Objective 50601.02 Has the Following Strategies:**

- The DMME Division of Mineral Resources project staff will work with DMME regulatory program staff to define geologic conditions that adversely effect the environment at active mineral extraction sites and provide feedback to reduce environmental impacts.
- The DMME Division of Mineral Resources Orphaned Mined Land Advisory Committee representative will review results of annual assessments of abandoned mines with regard to geologic conditions that adversely affect the environment and provide recommendations to facilitate reclamation.

#### **Objective 50601.03**

##### ***To improve customer capabilities in the wise use of mineral, land, water, and energy resources.***

In order to understand Virginia's geology, geologic and mineral resource investigations are needed in priority areas. Geologic and mineral resource information must be available to the public and business community. Technical assistance to customers helps them understand how geology affects their areas.

#### **This Objective Supports the Following Agency Goals:**

- Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources.  
( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 2, "Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources" and with the long-term objectives of Virginia to protect, conserve, and wisely develop our natural resources, to protect the public's safety, and be a national leader in the preservation and enhancement of our economy.)

#### **This Objective Has The Following Measure(s):**

- **Measure 50601.03.01**

##### ***Annual percent increase in the Virginia Geospatial Data Index.***

**Measure Type:** Outcome      **Measure Frequency:** Annually

**Measure Baseline:** 8% (avg. FY 2001 - FY 2005)

**Measure Target:** >= 4% (FY 2007 - FY 2008)

**Measure Source and Calculation:**

This measure is calculated based on data showing the level of detail and degree of completion of geologic information and maps available in web, digital, published paper, or open file form, adjusted based on a relevance factor related to population growth in each county covered by the data. The index is used to calculate percentage growth of available information per year.

#### **Objective 50601.03 Has the Following Strategies:**

- The DMME Division of Mineral Resources will conduct and make available the results of geologic and mineral resource investigations based upon a defined rationale that identifies the areas and concepts of investigation.
- The DMME Division of Mineral Resources will continue to provide for the sale of maps, publications, and other geologic information through the sales office and DMME's website, and will take steps to improve the delivery of customer services and expand the number of products made available electronically.



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- The DMME Division of Mineral Resources will provide effective, timely, and useful assistance to its customers through site visits, referrals, consultative services, technology transfer, partnerships, and leveraging other resources.
- The DMME Division of Mineral Resources will pursue methods, such as external funding, partnerships, leveraging, and cooperating with local, state, federal, and university projects to promote the wise use of mineral, land, water, and energy resources.

#### **Objective 50601.04**

##### ***To improve the quality of customer relationships and responses to business opportunities.***

Enhancing the relationship with Virginia's mineral and manufacturing industries will help DMME better identify the types of information on mineral commodities necessary to support the state's mineral and manufacturing industries and increase the value of DMME services to the industries.

##### **This Objective Supports the Following Agency Goals:**

- Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources.  
( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 2, "Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources" and with the long-term objectives of Virginia to protect, conserve, and wisely develop our natural resources, to protect the public's safety, and be a national leader in the preservation and enhancement of our economy.)

##### **This Objective Has The Following Measure(s):**

###### ● **Measure 50601.04.01**

###### ***Customer satisfaction rating.***

**Measure Type:** Outcome

**Measure Frequency:** Every Six Months

**Measure Baseline:** 3.2 (first half of FY 2005)

**Measure Target:**  $\geq 3.0$  (FY 2007 - FY 2008)

###### **Measure Source and Calculation:**

The DMME Division of Mineral Resources (DMR) surveys customers about the value and use of information provided by the Division through the DMR Customer Assistance Tracking System. Questions addressing the value of the information are reviewed to calculate average rating given by customers on a 0 to 4 scale.

##### **Objective 50601.04 Has the Following Strategies:**

- The DMME Division of Mineral Resources will expand contacts and build relationships by participating in strategic business development opportunities to ensure DMME is providing the right products and services to its customers in a timely manner.
- The DMME Division of Mineral Resources will identify, evaluate, and respond to new opportunities and emerging geotechnical and resource issues such as new federal programs, emerging mineral industry trends, and the Virginia Energy Plan.

#### **Objective 50601.05**

##### ***To build mutually beneficial relationships and partnerships with Virginia state agencies.***

Enhancing the relationship with other state agencies will help DMME better identify the types of

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information on geologic and minerals necessary to support their business and increase the value of DMME services to the agencies

#### **This Objective Supports the Following Agency Goals:**

- Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources.

( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 2, "Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources" and with the long-term objectives of Virginia to protect, conserve, and wisely develop our natural resources, to protect the public's safety, and be a national leader in the preservation and enhancement of our economy.)

#### **This Objective Has The Following Measure(s):**

- **Measure 50601.05.01**

***Consumer satisfaction rating.***

**Measure Type:** Outcome

**Measure Frequency:** Every Six Months

**Measure Baseline:** 3.2 (first half of FY 2005)

**Measure Target:**  $\geq 3.0$  (FY 2007 - FY 2008)

**Measure Source and Calculation:**

The DMME Division of Mineral Resources (DMR) surveys customers about the value and use of information provided by the Division through the DMR Customer Assistance Tracking System. Questions addressing the value of the information are reviewed to calculate average rating given by customers on a 0 to 4 scale.

#### **Objective 50601.05 Has the Following Strategies:**

- The DMME Division of Mineral Resources staff will expand contacts and communication with state agencies to identify and respond to areas of mutual interest and potential for cooperation such as:
  - Sharing geologic sub-surface data with the Virginia Department of Transportation.
  - Providing the geologic framework and stratigraphic information for ground water characterization with the Department of Environmental Quality.

#### **Objective 50601.06**

***To improve the organization, distribution, and preservation of new and existing geologic information.***

Enhancing the methods DMME manages geologic information, particularly how it is cataloged and made available across the Internet, will increase the value of the information to agency customers.

#### **This Objective Supports the Following Agency Goals:**

- Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources.

( This objective is consistent with DMME's mission of enhancing the development and conservation of mineral resources in a safe and environmentally sound manner. Geologic and mineral resource activities are mandated in Chapter 25 of Title 45.1 of the Code of Virginia. This objective aligns with DMME's strategic direction under goal 2, "Encourage economic development through our customers' wise management of Virginia's energy, mineral, land, and water resources" and with the long-term objectives of Virginia to protect, conserve, and wisely develop our natural resources, to protect the public's safety, and be a national leader in the preservation and enhancement of our economy.)

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#### This Objective Has The Following Measure(s):

- **Measure 50601.06.01**

*Annual percent increase in the Virginia Geospatial Data Index.*

**Measure Type:** Outcome

**Measure Frequency:** Annually

**Measure Baseline:** 8% (avg. FY 2001 - FY 2005)

**Measure Target:** >=4% (FY 2007 - FY 2008)

**Measure Source and Calculation:**

This measure is calculated based on data showing the level of detail and degree of completion of geologic information and maps available in web, digital, published paper, or open file form, adjusted based on a relevance factor related to population growth in each county covered by the data. The index is used to calculate percentage growth of available information per year.

#### Objective 50601.06 Has the Following Strategies:

- The DMME Division of Mineral Resources will organize and prioritize geologic data and information to be digitally cataloged, physically stored, and made available in electronic format.
- The DMME Division of Mineral Resources will make additional digital geologic data available through its Internet site.